

BEFORE THE  
POSTAL REGULATORY COMMISSION  
WASHINGTON, DC 20268-0001

Mail Processing Network  
Rationalization Service Changes, 2012

Docket No. N2012-1

INITIAL BRIEF OF THE PUBLIC REPRESENTATIVE

(July 10, 2012)

Respectfully Submitted,

/s/ Christopher J. Laver

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Docket No. N2012-1

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## I. INTRODUCTION AND BACKGROUND

On December 5, 2011, the Postal Service filed a request with the Commission for an advisory opinion on certain changes in the mail processing network.<sup>1</sup> In short, the Postal Service's plan is the elimination of the expectation of overnight service for First-Class Mail and Periodicals. *Id.* at 1. The plan also relaxes some two-day service standards, which results in more 3-digit ZIP Code pairs with a three-day delivery standard. *Id.* The Postal Service contends that such relaxation of service standards would allow it to consolidate its mail processing and transportation networks and save money. *Id.* at 1-2.

This case is not about whether the Postal Service's proposal, in a very narrow legal and technical sense, violates any of the policies of title 39. Rather, this proceeding provides parties and the Postal Service an opportunity for due process to examine whether the Postal Service's proposal is robust in its support for a change in service that will affect every user of the mail.

This brief outlines the Postal Service's plan, and discusses, both from a policy perspective and from a technical perspective, the relative merits and shortcomings of the plan based on the record evidence. From an operations perspective, the Public Representative does not dispute the Postal Service's obligation to determine the best steps to help alleviate its financial predicament. In this case, the Public Representative does not oppose the Postal Service's plan, but finds that there are serious questions that must be answered before the Postal Service moves forward. Those questions include:

- Does the Postal Service consider the policy implications of an increase in real price (decrease in service quality) for two classes of mail subject to a price cap?
- Is there a reliable estimate of the volume and revenue loss that may result from the Postal Service's proposed plan?

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<sup>1</sup> Request of the United States Postal Service for an Advisory Opinion on Changes in the Nature of Postal Services, December 5, 2011 (Request).

- Is there sufficient justification for expected savings, such as increases in productivity at plants receiving additional workload?
- Does the Postal Service appropriately and fully utilize the modeling and optimization tools available to it?

The following chapters discuss how the Postal Service does not show, based on the evidence in the record before the Commission, that it is exercising due diligence in exploring the answers to these questions. This brief will demonstrate that the Postal Service ignores the economic reality that a relaxation of service standards on two classes of mail is in fact a relaxation of the price cap applicable to those classes. Good business practice requires that the Postal Service balance the loss of value to mailers against the potential cost savings. The brief explains that the Postal Service attempts such balancing but does not thoroughly complete it. The lack of reliable volume or loss estimates, coupled with the lack of an accurate picture of costs (as a baseline for comparison or for the proposed network through expected productivity improvements) means the balancing is not possible based on the evidence in the record. Finally, though encouraged to see the Postal Service engage in optimization modeling, the Public Representative observes that the modeling tools were not validated, and the modeling results were significantly changed due to subjective “management expertise.”

While the Public Representative does not oppose the Postal Service’s plan, he cannot endorse it based on the incomplete analysis presented in this proceeding. The remainder of this chapter addresses procedural and background issues associated with the advisory opinion proceeding.

#### A. Postal Service’s Proposal

The Postal Service’s direct case is supported by testimony from twelve witnesses. Witness David Williams (USPS-T-1) describes the changes the Postal Service plans on implementing. Witness Emily Rosenberg (USPS-T-3) describes the modeling efforts the Postal Service made in an effort to optimize its network. Other witnesses, such as Frank Neri

(USPS-T-4), Dominic Bratta (USPS-T-5), and Cheryl Martin (USPS-T-6) provide information on how specific operations will be changed as a basis for cost savings. Witnesses Marc Smith (USPS-T-9) and Michael Bradley (USPS-T-10) tie together the operational changes to create a gross savings estimate. Witnesses Rebecca Elmore-Yalch (USPS-T-11) and Greg Whiteman (USPS-T-12) attempt to provide an estimate of the lost volume, and therefore lost revenue, attributable to the Postal Service's proposal. Other witnesses discuss issues germane to the proposal, but that have less of an impact on issues relating to the general public's interest.

#### B. Jurisdiction

Title 39 section 3661 requires that "[w]hen the Postal Service determines that there should be a change in the nature of postal services which will generally affect service on a nationwide or substantially nationwide basis..." that it "submit a proposal...to the Postal Regulatory Commission requesting an advisory opinion on the change."

In this case, the Postal Service filed the Request and acknowledges the scope of the proposed changes by stating that they may "potentially affect every sender and recipient of mail served directly by the United States Postal Service, and are likely to affect most of them." Request at 3. The Commission clearly has jurisdiction to issue an advisory opinion on the Postal Service's proposed nationwide service changes.

#### C. Legal Requirements

The Postal Service's Request asks "that the Postal Regulatory Commission issue an advisory opinion regarding whether certain changes in the nature of postal services would conform to applicable policies of title 39, United States Code." Request at 1. The Postal

Service's Request misses a subtle distinction in the statutory language, and the Postal Service has previously made this error.<sup>2</sup>

If the Postal Service carefully reads the applicable statutory provision, it would see that the Commission's advisory opinion must conform with the policies of the title, but there is not a direct link in the statutory language between the proposed change and the adherence to the policies of title 39.

The specific language of 39 U.S.C. §3661 reads as follows:

...

(b) When the Postal Service determines that there should be a change in the nature of postal services which will generally affect service on a nationwide or substantially nationwide basis, it shall submit a proposal, within a reasonable time prior to the effective date of such proposal, to the Postal Regulatory Commission requesting an advisory opinion on the change.

(c) The Commission shall not issue its opinion on any proposal until an opportunity for hearing on the record under sections 556 and 557 of title 5 has been accorded to the Postal Service, users of the mail, and an officer of the Commission who shall be required to represent the interests of the general public. The opinion shall be in writing and shall include a certification by each Commissioner agreeing with the opinion that in his judgment the **opinion conforms to the policies established under this title.**

39 U.S.C. § 3661 (emphasis added). Clearly, if Congress had simply intended the Commission to issue an advisory opinion on whether the Postal Service's proposal comports with the policies of title 39, it would have said so in the law. The statute refers to the Postal Service's hypothetical proposed changes in service as both a "proposal" and "change", but neither word is used in describing the link between the advisory opinion and the policies of title 39. Rather, the statute requires that the Commission offer its advice on the proposal, and requires that the advice from the Commission conforms to the policies of title 39.

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<sup>2</sup> See Report of the United States Postal Service Regarding Advisory Opinion in Postal Regulatory Commission Docket No. N2010-1. Specifically the report states that "The Commission's opinion does not advise whether the service changes would conform to applicable statutory policies or recommend for or against them." The report is available at: <http://about.usps.com/news/electronic-press-kits/five-day-delivery/> (accessed July 10, 2012).

The Postal Service's misreading of the statute is a subtle difference, but it illustrates a fundamentally flawed view of the advisory opinion process, and the Commission's role in that process. The proceeding is not meant to be a simple approval or disapproval, but rather expert advice crafted within the bounds of the policies established under title 39, following the opportunity for due process for those mailers affected by the change.

The policies established under title 39 undoubtedly provide a lens through which to view the Postal Service's proposal, but the plain reading does not require the Commission to give a thumbs-up or a thumbs-down, rather, the Commission is tasked with giving advice that conforms to the statute. For the Postal Service to continue to suggest otherwise is a misrepresentation of the law.

#### D. Procedural Requirements

The law requires that the Postal Service submit its nationwide or substantially nationwide proposal to change service "a reasonable time prior to the effective date of such proposal...." 39 U.S.C. § 3661(b). The Commission's implementing regulations require that the "request shall be filed not less than 90 days in advance of the date on which the Postal Service proposes to make effective the change in the nature of postal services involved." 39 C.F.R. 3001.72.

The Postal Service announced its intention to begin implementation "no earlier than March 5, 2012." Request at 13.<sup>3</sup> The Postal Service's Request therefore technically complies with rule 3001.72.

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<sup>3</sup> Subsequently there have been several changes to the implementation schedule, most recently a change that breaks implementation into "phase I" and "phase II," where most of the service change impact will not be completed until "phase II" in 2014. See Postal Service Moves Ahead with Modified Network Plan, May 17, 2012, available at [http://about.usps.com/news/national-releases/2012/pr12\\_058.htm](http://about.usps.com/news/national-releases/2012/pr12_058.htm) (accessed July 10, 2012).

## II. THE PROPOSAL SHOULD BE EXAMINED IN LIGHT OF THE RATE CAP

This chapter examines whether the Postal Service has adequately considered, based on the evidence in this docket, the policy implications of increasing the real price (decreasing service) for two market dominant classes of mail. Given that each market dominant class of mail is constrained by a price cap that applies at the class level, the Postal Service fails put forward evidence that examines the relationship between the quality of service for a class of mail and the price paid for that service.

As this chapter demonstrates, the relaxation of service standards on two classes of mail are equivalent to the relaxation of the price cap as it applies to those two classes of mail. Despite the lack of a direct connection in the law, such as a productivity factor that adjusts the amount of rate authority based on service attainment, the Postal Service and Commission should not ignore the economic reality that decreasing service for two classes of mail is a *de facto* rate increase for those two classes of mail.

The Public Representative respectfully requests that the Postal Service, in consultation with the Commission, consider implementing service standards with a quantitative link to rate adjustment authority (such as a penalty system for failure to meet standards), to ensure the general public has an expectation of a level of service going forward.

### A. Class-based Rate Cap Regime

As the Postal Service, Commission, and participants are aware, the prices for the Postal Service's market dominant classes are constrained by an inflation-based rate cap. See 39 U.S.C. § 3622(d)(1). The Commission implemented section 3622 in 39 C.F.R part 3010, allowing the Postal Service to adjust rates, so long as it does not exceed an annual limitation based on inflation (specifically CPI-U) or the annual limitation plus any excess authority created by using less than the annual limitation in the past.

The law and regulations are explicit that absent an exigency, the inflation-based cap is an absolute constraint on the prices for each class of market dominant mail.



## B. Incentives in a Rate Cap Regime

In the current environment of postal regulation the task of regulating service quality can involve many nuances that may not arise when regulating service prices.<sup>4</sup> For example, an expert suggests that a regulator is clearly needed to settle the inevitable conflict between a firm's profit-maximizing and welfare-maximize pricing strategies. *Id.* This is because the firm will set prices to maximize its profits but may not necessarily consider maximizing the total welfare of its consumers as part of this pricing strategy. However, the conflict between profit-maximizing and welfare-maximizing levels of quality/service can be less obvious due, in part, to an association between multiple variants of quality and price differentiation. As multiple variants of quality and associated price differentiation arise, variation in customer valuations of quality may induce a profit-maximizing monopolist to imbed insufficient levels of quality in variants of service it delivers. *Id.* at 127.

The general economic philosophy behind monopolistic pricing and quality relationships presumes consumers are perfectly informed about the quality of service they will receive before making a purchase. When consumers are less informed, one economic theory suggests producers will reduce the quality of services if the strategy reduces operating costs without significantly reducing consumer demand. *Id.* at 128. It appears the Postal Service may in fact be relying on such uninformed customers to keep the impact low. See Tr. 12/4408.

Witness Neels addresses the relationship between service quality and pricing within the Postal Service's current rate cap regime. Neels explains that the pricing provision of the Act "limits the rate increases to which users of market dominant services are subject, and in that way achieves the goal of limiting the exercise of market power by the Postal Service." Tr. 10/3234. Previously, the Postal Service operated under the auspices of *cost of service*

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<sup>4</sup> Sappington, David. "Regulating Service Quality: A Survey," *Journal of Regulatory Economics*, November 2005, page 125.

*regulation* which requires regulators to set prices at levels covering the cost of providing the service.<sup>5</sup> Neels further explains that *price cap regulation* evolved as an alternative method of constraining prices charged by monopoly service providers.<sup>6</sup> In this case, the regulated firm has the incentive to reduce costs or improve efficiency because it retains the financial benefit. Tr. 10/3237.

Neels admits regulators have wrestled with the problem of customer protection from monopoly service providers because the economics associated with price cap regulation may incentivize the regulated firm to reduce the quality of service it offers. *Id.* at 3240. He surmises there are two ways to rectify this conflict: (1) implement a floor on service quality in the form of service standards, or (2) allow the regulating entity to impose financial awards and penalties for increases and decreases in actual quality achieved.

Neels mainly argues that the Postal Service's proposed adjustment in the quality of First-Class Mail is effectively "a relaxation of the price cap that has been established for market dominant services." *Id.* at 3243. He admits, "reducing service standards for First-Class Mail and shedding the related costs may be the best option for the Postal Service." Nonetheless, he also declares the Postal Service requests regulatory relief to "balance its budget on the backs of customers of market dominant services, specifically users of First-Class Mail and Periodicals." *Id.*

NALC witness Crew concurs with Neels's assessment stating, "[the Postal Service] is attempting to [circumvent] the price cap by imposing, de facto, a real price increase through a reduction in First-Class Mail service standards. Tr. 10/3564-65. Crew asserts that regulators

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<sup>5</sup> Also called *rate of return regulation*. Neels declares this method is retrospective in nature because the regulator looks at what has transpired and makes adjustments to compensate for excessive or insufficient profits.

<sup>6</sup> Price cap regulation establishes a ceiling on the prices that the regulated firm can charge and a formula for how that ceiling will change over some specified period of time. In cases where the regulated firm sells multiple products, the ceiling will often constrain the rate at which a specified weighted average of prices can increase, as is the case with the price cap currently applied to market dominant services provided by the Postal Service. Tr. 10/3237.

of other postal systems take steps to prevent real-price increases resulting from cuts in service standards. *Id.* at 3565.

### C. Postal Service Proposal is an Increase in Real Price

When the Postal Service adjusts prices, pursuant to its authority under title 39, it adjusts the nominal price for each product. Subsequent to the adjustment (which historically is a net increase in prices even though individual rate cells may increase or decrease), mailers pay more in dollars for the same products or services.

Similarly, when the Postal Service reduces the quality of service, mailers of the classes of mail affected by the change are paying the same amount for less service. In economics, this is equivalent to an increase in price – paying the same for less service is equivalent to paying more for the same amount of service. This increase in real price has been recognized by numerous economists testifying before the Commission, and has not been rebutted by the Postal Service. See Tr. 10/3240, and Tr. 11/3649. Regardless of whether the law separates quality of service from price paid for that service, in an economic sense the two are inextricably interlinked. Tr. 10/3328. Without any recognition of the relationship between the two concepts, when the Postal Service sets its own service standards, it is “akin to having [it] ...set its own price cap.” *Id.*

It is because of this relationship between prices and quality of service that the Postal Service’s proposal must be viewed with a critical eye. As discussed previously, the price cap is enforced at the class level. Such enforcement is designed to protect all mailers. A First-Class Mail mailer is protected from having First-Class rates increased at a rate far in excess of the rate of inflation while Standard Mail enjoys a lower-than-average increase.<sup>7</sup> However, in this case, the Postal Service is proposing to adjust the quality of service for two classes of

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<sup>7</sup> As demonstrated in the Postal Service’s pricing for Standard Mail parcels, the class-based rate cap does not, on its own, prohibit the Postal Service from giving products above-CPI increases, so long as the class as a whole remains at or under the annual limitation.

mail: First-Class Mail and Periodicals. These two classes of mail experience an increase in real price (based on the reduction in service) and the price cap fails to protect mailers from the increase in real price.

It is difficult to quantify value of the level of service in order to evaluate the proposal under the price cap law and regulations. Tr. 10/3317-18. While all involved are aware of the direction of the reduction in service as it relates to price, no party has put forward evidence to quantify the reduction in service. Witness Neels indicates that market research may be the only way to attempt to quantify the amount of price increase that the proposal represents. *Id.* at 3318. Postal Service witness Williams reluctantly agrees that paying the same amount for a decreased amount of service is equivalent to an increase in price, but states that it is “a necessary step that the Postal Service has to take to be financially stable....” Tr. 2/360-362.

Postal Service witness Elmore-Yalch argues that a decrease in service quality may not be perceived by customers (or that customers may not perceive a decrease as a decrease). Tr. 12/4384. If witness Elmore-Yalch is correct, then it may mean that the reduction in service is of such a nature that it would only be equated to a very small increase in real price for First-Class Mail and Periodicals. However, if witness Elmore-Yalch is mistaken, and earlier market research (undertaken by the Postal Service and later abandoned when results showed that the Postal Service’s losses could be significantly greater), is accurate, then the decrease in service may be a significant real price increase on First-Class Mail and Periodicals mailers.

As witness Neels states: “user welfare is reduced when quality declines, just as when prices rise.” Tr. 10/3241. “The directional effects are clear. If quality is reduced the effect on consumer welfare is the same as if price is increased.” *Id.* at 3243. The Public Representative agrees that “[t]he inevitable conclusion that must be drawn from these observations is that the reduction in service standards that the Postal Service has requested is, in effect, a relaxation of the price cap that has been established for market dominant services.” *Id.*

#### D. Postal Service's Failure to Address Trade-offs Between Price and Quality

The Postal Service does not examine the economic link between a proposal to reduce the quality of service for two market-dominant classes of mail and a price-cap set at the class level. Perhaps the Postal Service believes, as was raised during oral cross-examination, that because there is no direct link within the law that these two areas should be considered in isolation. See Tr. 3322-23. However, the Postal Service is silent on this point. The Postal Service's failure to discuss the economic link raises serious concerns about its consideration of the policy implications of its proposal.

As a rule of statutory construction, one must construe each provision of a statute to "give effect to all of the statute's provisions, not rendering any provision superfluous." See *Thomas v. D.C. Dept. of Employment Services*, 547 A.2d 1034, 1037 (D.C., 1988). In this case, construing the statutory provisions relating to changes in service in isolation to other statutory provisions, such as the price cap, could have the effect of creating a nullity. In other words, as witness Neels stated, allowing the operator to change service at will is akin to allowing the operator to set its own price cap. For the price cap to have any meaning at all, it can only be evaluated if the regulated price represents a given level of service.

The Public Representative acknowledges the Postal Service's financial predicament. It may be true that the Postal Service, as witness Williams suggests, must degrade service in order to remain viable. Unfortunately, price cap regulation alone does not always provide the ideal incentives for service quality enhancement.<sup>8</sup> This is because the regulated firm usually bears the full costs of increasing or maintaining service quality.<sup>9</sup> Nonetheless, in this case, the Postal Service is effectively circumventing its price cap constraints by decreasing the

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<sup>8</sup> Armstrong, Mark & Sappington, David, "Recent Developments in the Theory of Regulation." Department of Economics. University College of London, University of Florida, October 2005. Page 70.

<sup>9</sup> *Id.* at 71. Armstrong and Sappington suggest that this causes the firm to minimize its costs of delivering service quality and to deliver to customers the levels of service quality on multiple dimensions that they value most highly.

quality of service for First-Class Mail and Periodicals. As a postal operator with the duty to deliver monopoly products at constrained price levels, it is incumbent on the Postal Service to articulate how a proposal to decrease service quality for two specific classes of mail is consistent with a statutory rate cap that attempts to protect users of each class of mail. The Public Representative recommends that the Commission consider advising that the Postal Service implement specific service standards coupled with rate adjustment authority penalties for failing to meet those standards. Both the Commission and Postal Service should consider the economic link between quality and price when offering advice to Congress in the next round of postal law reform. The link could be a combination of a reward system for exceeding standards and a penalty for failing to meet standards.

### III. ESTIMATES OF VOLUME AND REVENUE LOSS

The following sections discuss the viability of the Postal Service's volume, revenue and savings estimates, its abandonment of previous estimates and various concerns expressed by interveners in the case. The Postal Service used market research firm ORC International (ORC) to gather qualitative and quantitative data from consumers, small businesses, national, premier and preferred accounts. Qualitative market research was gathered through focus groups and in-depth telephone interviews.<sup>10</sup> The purpose of this qualitative data was to improve understanding of the various ways consumers and businesses would respond to changes in First-Class Mail.<sup>11</sup> The quantitative research "was designed to estimate, by segment, the percentage by which each applicable product's volume would increase or decrease if changes to current First-Class Mail service standards were implemented."<sup>12</sup> Based on this research, witness Whiteman estimated a total volume loss of 1.7 percent and total revenue loss of 2.0 percent due to the proposed changes in First-Class Mail service standards.<sup>13</sup>

The estimates for volume and revenue loss are extremely important. The high level empirical analysis as to whether the mail processing realignment is "worth it" necessarily entails balancing the loss of value to mailers against the potential cost savings to the Postal Service. The next chapter discusses the potential cost savings that accrue for the Postal Service. In this chapter, the estimates for volume and revenue loss are the closest proxy for "loss of value to mailers" that is available. Two sets of market research, with the same goals and company performing the research, produced two drastically different results. The two

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<sup>10</sup> Consumers and Small Businesses participated in focus group sessions while larger National accounts were given In-Depth Interviews (IDIs) conducted over the telephone.

<sup>11</sup> USPS-T-11 at 6. Witness Elmore-Yalch also stated that the qualitative research helped to explain some of the counter-intuitive quantitative results. See Tr. 12/4408.

<sup>12</sup> USPS-T-11 at 15.

<sup>13</sup> USPS-T-12 at 22. Market research data presented in Elmore-Yalch's testimony was collected between October 26 and November 8, 2011. The table appearing on page 22 of witness Whiteman's testimony summarizes the loss of volume and loss of revenue, by product that the Postal Service estimates will result from its proposal.

different results in the record show there can be no confidence in the accuracy of the Postal Service's calculation for the lost value to mailers.

#### A. Volume Estimates

Other parties express several concerns that the Postal Service underestimates total volume and revenue loss. APWU and NNA both argue that the Postal Service has not considered all the possible ramifications of the proposed changes and therefore underestimates the total impact. For instance, APWU posits the market research, which serves as the basis of the Postal Service's volume and revenue estimates, does not adequately address the impact on other postal products. Tr. 11/3750. It argues in support that additional "friction points" will arise if service standards for parcels are adversely impacted. *Id.* NNA witness Health echoes the concern urging the Postal Service to seriously consider all of the ramifications to this service proposal before supporting it. Tr. 10/2847.

NALC witness Michael Crew contends that ORC's basic methodology is flawed and limitations within the methodology yield inaccurately lower volume loss estimates. Specifically, NALC witness Crew expects the mail volume loss would be far greater than the Postal Service's estimates without the downward bias of ORC's methodology. Tr. 11/3547. Crew asserts that ORC and witness Elmore-Yalch's application of the likelihood (probability of change) and "solely attributable" factors creates estimated volume losses that would have been far greater if not used. *Id.* at 3553.<sup>14</sup> Additionally, witness Crew contends that the point estimate of a 1.7 percent volume loss is "not useful if the confidence interval associated with it is low." *Id.* at 3554. Crew claims Elmore-Yalch's confidence intervals illustrate a relatively large range of possible outcomes for the volume estimates. *Id.*<sup>15</sup>

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<sup>14</sup> Witness Crew contends that the estimated volume losses would have been at least four times greater if the two factors (probability of change/likelihood and solely attributable) were not used.

<sup>15</sup> A confidence interval provides the range within which an estimate is expected to fall if the survey were repeated.



Witness Elmore-Yalch addresses Crew's oppositions in her surrebuttal testimony. In general, she claims that Crew's opposing testimony relies "upon his opinion and simple economic principles" as support and does not "engage in scientific and technical discourse." USPS-SRT-4 at 1. She addresses two of Crew's opposing arguments regarding volume estimates. First, Elmore-Yalch speaks to Crew's assessment of ORC's market research as flawed due to the inappropriate use of the likelihood factor. She notes, "[Crew] does not take into consideration that nearly all forecasts of future volumes use some form of weight, using either historical or survey data." *Id.* at 16. As an example, she illustrates the importance of weighting estimates of behavior utilizing a voter survey scenario. She concludes that failure to apply a probability weight reflecting likelihood of voting would lead to incorrect estimates and possibly implementation of improper strategies. *Id.* at 18. She further supports her rebuttal citing a recent study on intentions to donate money to charitable organizations. She claims results from the article illustrate "donating intentions were the only significant predictor of donating behavior." *Id.* at 19.

Witness Elmore-Yalch addresses NALC's argument that ORC's confidence intervals were incorrectly calculated. Specifically, NALC asserts that the estimates are not normally distributed and therefore the associated confidence intervals should not be calculated using this assumption. Elmore-Yalch explains that the distribution is "non-normal" because most respondents claimed no change to their mailing volume making the distribution seem like a "single point hovering around zero." As such, she admits that there are other ways to deal with non-normal distributions but states that ORC's analysis and application of the "normal distribution" confidence intervals is based on common industry practice. Tr. 12/4403.<sup>16</sup>

Elmore-Yalch also challenges Crew's assessment that some responses obtained from respondents in the quantitative research were contradictory.<sup>17</sup> She utilizes a research article

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<sup>16</sup> NALC states that it has not received new confidence intervals but ORC has conducted a series of tests to determine "whether or not the differences are statistically significant from zero."

<sup>17</sup> Crew challenges data points indicating a possible increase in mail volume due to service degradation.

from Cowen and Ellison which state two possible strategies when confronted with contradictory data. The article suggests to either discard data points outside feasible ranges or replace them with the nearest feasible value. USPS-SRT-4 at 25. Elmore-Yalch contends such a procedure would be “inappropriate since it would have a dramatic effect on the apparent estimates and variance.” *Id.* at 26. She notes that 18 percent of small businesses and 16 percent of home-based businesses reported they would increase mail volume in response to change in service standards. Elmore-Yalch explains that Crew’s assertion that these responses are contradictory is incorrect because, according to the qualitative data, some survey participants viewed the proposed service changes as improvements over their current expectations. *Id.* at 27.

#### B. Revenue Estimates

Testimony from APWU and NALC stress the risk associated with dismantling or restructuring the Postal Network. APWU witness Marc Schiller cites three significant sources of risk involved with the proposed restructuring: (1) volume loss specifically due to the proposed service changes, (2) greater volume loss due to customer concerns, and (3) opportunity cost from dismantling the network. Tr. 11/3774. NALC witness Crew echoes the first concern by suggesting Whiteman’s testimony incorrectly assumes that customers will not view lower service standards as a significant change. Tr. 11/3546. Consequently, witness Crew contends that the Postal service effectively underestimates the amount of business it will lose from its proposed service reduction. He explains by highlighting Whiteman’s testimony:

[M]any customers are either unaware of First-Class Mail service standards and/or perceive that First-Class Mail service performance takes longer than the current service standards (and longer than our actual service performance); hence the changes in the service standards would not be perceived as a significant change.

*Id.*

In this case, Witness Crew explains, “if customers currently perceive the level of quality to be lower than it actually is, then lowering quality further may result in [customers]

perceiving quality as even lower.” Tr. 11/3540. Witness Crew concludes that customers will discontinue the use of the First-Class Mail product in larger than expected numbers. APWU witness Marc Schiller adds, “Relaxing service standards may cause a significantly increased runoff of existing volume and revenue and may preclude excellent opportunities to grow in the very attractive Business to Consumer parcel market.” *Id.* at 3744.

The Public Representative is concerned the Postal Service underestimates total volume and revenue loss resulting from their proposed changes to service standards. However, of equal concern is the limited data available on volume and revenue impact past the first 12 months of implementation. For example, Postal Service witness Greg Whiteman admits that the estimations only “occur in a single year” and the research was designed to only estimate revenue loss in the first full year after implementation. Tr. 3/783.<sup>18</sup> Nevertheless, Whiteman expects the estimated change will take effect over a much longer period of time.” USPS-T-12 at 8. APWU challenges this overall supposition stating the “risk of customer runoff is potentially much greater than the official market research submitted by the USPS in its testimony.” Tr. 10/3750.

The Public Representative considers the estimates produced by witness Whiteman impractical representations of mail volume change based on proposed service plans. Such a limited volume forecast fails to address the inherent risk associated with the Postal Service’s proposal. Risks such as perpetual volume loss due to decreased demand are simply not addressed by the Postal Service in this docket. NALC criticizes this approach stating:

USPS’s market research is of limited value since it only asked respondents to estimate how their mailing behavior would change in 2012. However, there is no reason to believe that the volume loss will be a limited, one-time phenomenon. To the contrary, the volume loss will likely continue over time, as customers dissatisfied with degraded service standards turn to alternatives.

Tr. 11/3547-48.

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<sup>18</sup> The Public Representative asked witness Gregory Whiteman if the impact figures from his testimony on page 7 were “perpetual, recurring, or one-time.” Whiteman answered that the “revenue losses would occur in a single year since that was the nature of the research design.”

The Public Representative understands the complexities that may exist when forecasting consumer intentions past a 12-month horizon. However, there are a myriad of forecasting techniques that may be used in conjunction with ORC's quantitative data. Therefore, the Public Representative requests the Postal Service and Commission incorporate a meaningful discussion of the impact of the mail processing network realignment on mail volumes and revenues beyond the current 12-month horizon.

### C. Abandoned Research Estimates

Elmore-Yalch testifies that the Postal Service contracted ORC to do market research beyond the Saturday delivery and current mail processing network realignment cases. Tr. 3/596. The additional research, called the "all-causes" research was designed to gauge the impact of the mail processing realignment but witness Elmore-Yalch contends that it probably included impacts from changes in first class mail service and other policy revisions. *Id.* at 597.<sup>19</sup> The research initiative acted as a preface to the research utilized in the current network rationalization case. *Id.* at 596. Specifically, the "all-causes" research served as Phase I of the current market research, while the information presented in Elmore-Yalch's testimony represents Phase II. *Id.* at 646-47. The preliminary results from Phase I of the market research revealed a 7.7 percent decrease in volume and a \$5 billion decrease in revenue as a result of *all* potential operational changes to the Postal Service.<sup>20</sup> As a comparison, research from Phase II illustrates a 1.7 percent decrease in volume and \$1.3 billion decrease in revenue.

The discrepancy between Phase I and Phase II results raises concerns as articulated by APWU witness Schiller. He declares Phase II results filed in Elmore-Yalch's written

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<sup>19</sup> Other potential changes to the Postal Service considered in this research were the elimination of Saturday delivery, the dire financial situation, and post office closings.

<sup>20</sup> USPS-LR-N2012-1/NP14. Selected data as referenced above was made public in APWU Cross-Examination Exhibit 1. See. Tr. 3/856.

testimony are flawed due to a relatively modest negative customer reaction versus Phase I results which indicated stronger and more accurate negative customer reaction. Schiller explains that this research clearly reveals a “substantial runoff of volume” that more accurately reflects customers’ shipping behavior and sentiment. Tr. 11/3708-09.

The Public Representative considers the ‘all-causes’ research approach a viable strategy when estimating mail volume and revenues in the current postal environment. In addition, intervenors such as APWU and NALC view the abandoned research results as more consistent with their understandings of customer demand after proposed changes are implemented. See *id.* at 3548, 3749. The abandoned results highlight the Postal Service’s knowledge of a more substantial runoff of mail volume and revenues if all proposed policies are implemented. As such, volume and revenue estimations submitted in this docket are underestimated and net savings estimations are overestimated.

#### D. Probability Factors

This section discusses the Postal Service’s method of forecasting volume, revenue and savings from implementation of the proposed changes to First-Class Mail service standards. Primary data from survey responses and interviews were used to convert qualitative data to quantifiable probabilities or ‘likelihood of change’ factors. This method was previously used and criticized in the Six-to-Five-Day case, in which the Postal Regulatory Commission found in its Advisory Opinion no evidence demonstrating the “use of a likelihood factor in the way the Postal Service utilizes it.”<sup>21</sup> The following paragraphs compare and contrast the previous use of the likelihood factor in the Six-to-Five-Day case, note interveners’ criticisms of the method, and assesses its merit within the current Mail Processing Network Rationalization Service Changes case.

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<sup>21</sup> See Docket No. N2010-1, Advisory Opinion on Elimination of Saturday Delivery, March 24, 2011 at 112 (Six to Five Day Advisory Opinion).

Witness Elmore-Yalch explained in her testimony that “all [volume] forecast are based in part on the stated probability respondents would (1) change the volume of mail they would send if proposed changes to First-Class Mail were in place; or (2) change how they would send mail items if proposed changes were in place.”<sup>22</sup> Specifically, the survey asked participants to quantify the likelihood of altering mail volumes using an 11-point scale ranging from “0” meaning “not at all likely to change behavior” to “10” meaning “extremely likely [to change behavior].” *Id.* The respondent’s likelihood value was then converted to a “probability scale” which correlates those values to the probability of actual behavior.

The Postal Service and Elmore-Yalch implemented a similar approach to estimating volume change in the previous Six-to-Five-day case filed in FY 2010. In that case market research estimated percentage change in volume across mail products using survey questions about: (1) customer mail volumes during the past 12 months; (2) customer projected mail volumes for the next 12 months; (3) customer projected mail volumes in the first 12 months after five-day mail delivery was implemented; and (4) the likelihood that implementation of five-day delivery would impact their mail and package volumes.<sup>23</sup> Survey respondents estimated the likelihood their mail volumes would change based on an identical numerical 11-point scale where “0” meant “extremely unlikely [to change]” and 10 was “extremely likely [to change].” The numbers were then used to convert customer likelihood to a quantifiable probability of actual behavior.

In its Advisory Opinion to the Six-to-Five-Day case, the Commission reported conducting extensive research on the Postal Service’s use of the 11-point scale. They found the Juster scale, as it is commonly called, to be a “widely accepted method for estimating demand for new products” but did not find “literary evidence demonstrating the use of a likelihood factor in the way the Postal Service utilizes it”. *Id.* at 111. The Commission further

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<sup>22</sup> USPS-T-11 at 44.

<sup>23</sup> Six to Five Day Advisory Opinion at 110.

contended that (1) the Postal Service inappropriately used the Juster scale to deflate customer volume forecast and that (2) published academic literature did not refer to a likelihood scale used in a product or service reduction or elimination scenario. *Id.* at 112.

NALC criticizes ORC's use of the likelihood factor as inappropriate in the Six-to-5-day case and claims it is inappropriately used as a probability of change factor in the current Mail Processing Network Realignment (MPNR) case. Tr. 11/3550. NALC explains that the Postal Service underestimates the volume loss associated with its proposed changes due to the counterpart relationship between diminishing service and decreasing demand.<sup>24</sup> In this case, NALC continues to protests the Postal Service's use of a "probability of change" factor but also challenges its practice of further reducing respondent's estimated mail volume by a second likelihood factor called the 'solely attributable' factor. *Id.* at 3552. The *solely attributable factor* is the second expected value function applied to participants' original estimation of volume. Tr. 3/606-07. More specifically, this question/value was asked/applied to respondents who mentioned changing their volume or changing the way they sent mail due to the proposed service standards. It asked, "What percentage of the [decrease or increase] is solely because of the First-Class Mail service standards [previously] described?"<sup>25</sup> NALC states that the use of a likelihood factor to adjust respondents' estimates of mail volume only "muddies" the results further. Tr. 11/3552.

The Public Representative understands the Juster scale is frequently used in market research to help quantify consumer purchase intentions. The use of this marketing instrument by the Postal Service continues to raise questions. Witness Elmore-Yalch acknowledges that the risk to the Postal Service in this proceeding is to underestimate the volume response to the proposed change. Tr. 12/4440. While it appears true in market research that respondents may overstate their propensity to act, it also appears true that in

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<sup>24</sup> Six to Five Day Advisory Opinion at 107.

<sup>25</sup> USPS-T-11. See example on page 132 question "12Bills."

the vast majority of cases (such as product development, or measuring potential donations) the risk is that respondents would overstate their propensity. *Id.* at 4440-4444. There is added incentive to correct a possible overstatement with a probability when all of the risk is related to overstatement. However, that added incentive is not the case for the Postal Service, when all of the risk relates to possible mailer understatement.

The Postal Service does not, despite all of the research submitted in this docket, show that a probability factor is used in market research as a measurement tool for consumer purchase intentions when service is degraded. The Public Representative accepts that a probability factor is used frequently in market research to measure intentions as demonstrated in the literature provided. Yet the Postal Service compounds the use of probabilities by adding a second probability factor to further reduce respondent estimates. Such use is not documented or supported.

The Public Representative is concerned that the implementation of the 'solely attributable' factor, the second probability factor used in the subsequent Phase II research, jeopardizes its utility. Elmore-Yalch and Whiteman testified that the Postal Service suggested the inclusion of the second likelihood factor after receiving preliminary results from the Phase I research. Tr. 3/586. Elmore-Yalch also testified this factor was only used by a few respondents, thereby causing minimal effect on the overall estimates. *Id.* The tactic of using two likelihood weights on one survey question is unprecedented in marketing literature; therefore, the use of the 'solely attributable' factor should be intensely scrutinized by the Commission.

The Postal Service claims the addition of the extra likelihood factor serves to quantify the portion of a consumer's mail volume change attributable to the proposed changes in First-Class Mail. The Postal Service also claims historical data is not available for this scenario, but that test markets could be utilized to gather some understanding of consumers' actual versus proposed consumption patterns over time. The combination of historical data analysis from test markets and purchase intention data considering all variables should add to the reliability of the market research.



#### IV. CALCULATION OF COST SAVINGS

This chapter examines both the methods the Postal Service uses to measure baseline costs in the current network, as well as issues surrounding the Postal Service's calculation of savings. As referenced in the introduction to the previous chapter, the Postal Service's expected cost savings make up one side of the balancing that must be completed to determine if going forward with the mail processing network realignment (MPNR) is "worth it" for the Postal Service. One must balance the loss of value experienced by the mailer due to the diminution of service (in this case the proxy is the market research conducted by the Postal Service) against the potential cost savings that accrue to the Postal Service.

As discussed in more detail below, the cost savings estimates put forward by the Postal Service may not be reliable. There are issues regarding baseline costs (whether all of the savings put forward by the Postal Service can be attributed to the mail processing realignment) as well as methodology for calculating future costs (especially in the transportation area). The Postal Service also makes assumptions about productivity that appear to be out of touch with reality.

The Public Representative believes the most accurate way to calculate cost savings necessitates having an accurate benchmark to calculate costs. The benchmark should reflect the current operating network, but optimized under the current service standard. This benchmark avoids attributing costs (and therefore cost savings) to facilities that have closed previously, or facilities that could be optimized absent a service standard change. Similarly, the Public Representative urges the Commission to carefully review the Postal Service's productivity gain estimates.

##### A. Measuring Baseline Network Costs

The magnitude of savings estimated by realigning the mail processing and transportation networks significantly depends upon the benchmark used to estimate current costs. Parties agree on certain conditions that should comprise the costs of the existing network and disagree on others. The list includes:

- network conditions that are on-going and specifically related to activities required to maintain (not implement) the MPNR;
- the costs of implementing the new MPNR;
- network conditions that prevailed after Area Mail Processing Studies (AMPS) were completed;
- network conditions that prevailed after the Postal Service had negotiated greater staffing flexibility;
- the cost of the optimized network before the elimination of overnight delivery;
- the value of overnight delivery of First Class Mail, or the amount of money recipients of overnight First Class mail would be willing to pay to continue to receive this service after the MPNR.

#### 1. Full-up methodology

For the most part, the Postal Service properly compares FY2010 costs to costs that would occur if FY2010 costs, volumes, labor conditions, and all other conditions other than the network redesign and the elimination of the overnight delivery service were in place. For example, witness Bratta includes maintenance-related activities that would continue in the MPNR: Tr. 4/931, 982.

On the other hand, witness Bratta does not exclude costs that may occur whether or not the MPNR is implemented, such as selling mail processing equipment no longer needed because of consolidation unrelated to the elimination of First-Class Mail overnight delivery. See *id.* at 930. He also recognizes, but does not estimate, the additional maintenance costs that would be required if already aged mail processing equipment were to be operated at significantly greater daily run times. *Id.* at 968. These are examples of an inconsistent application of the Full-Up Methodology. Similarly, witness Martin does not include the ongoing costs of maintaining and staffing hubbing facilities. *Id.* at 1153, 1243.

Witness Matz convincingly describes how the MPNR will require additional tray-handling costs that were not included in the Postal Service's full-up analysis. Tr. 11/4088, 4091, 4094, 4096. This finding is consistent with the full-up methodology notion that ongoing costs that are the result of the proposed change should be considered a long-run cost of the

proposal, in contrast to one time transition/implementation costs, which are properly excluded. USPS-T-10 at 39.

## 2. Consolidation costs attributed to the MPNR

Witness Matz identifies many instances where consolidations could occur without the elimination of the overnight delivery standard. Tr. 11/4074-75, 4077. Witness Raghavan reaches a similar conclusion, that “it should be clear that some significant savings could be achieved by optimizing the current mail processing network under today’s service standard....” Tr. 10/3146. If the Postal Service proceeds with the elimination of overnight delivery, it would be more appropriate to use a baseline cost model for an optimized mail processing network under the current standard. Otherwise, the Postal Service is counting cost savings that are not a result of the elimination of overnight delivery.<sup>26</sup>

As the area mail processing (AMP) studies are completed, the landscape of the plants that would remain open after the MPNR changes. With the exception of witness Neri, the Postal Service’s cost savings witnesses filed testimony with reduced estimates of savings from the MPNR, due to the full implementation of AMP-based consolidations. See Tr. 5/1614, 1617 (Smith); USPS-ST-1 (Bratta); and USPS-ST-4 (Bradley). However, the Public Representative does not endorse changing the base case to include any changes that occurred after the end of FY 2010.<sup>27</sup> Most of the AMP consolidations occurred in FY2011

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<sup>26</sup> Similar issues arose in Docket No. N2010-1, the Advisory Opinion on Elimination of Saturday Delivery. The Commission found that “savings from existing excess capacity should not be attributed to five-day delivery.” See Six to Five Day Advisory Opinion at 53.

<sup>27</sup> This has implications for the focus group and survey information gathered by witness Elmore-Yach. She asked participants whether they would change their volumes in 2012 based on the changes proposed in this case. The Public Representative believes that asking about future volumes does not correspond to the Full-Up methodology the Commission has endorsed. It may have been advantageous if participants were asked how their volumes would have changed in FY2010 if the proposed changes had been in effect. Asking a backward looking question has the advantage that participants would know the demand and operating conditions of their businesses during that period of time. There would have been no need for any adjustment factors.

and FY2012, and should not be included in the base case estimate of mail processing and transportation costs. However, some of the increased flexibility in staffing was available during FY2010, but witness Neri's estimate of excess capacity and productivity improvement was based on the assumption that the Postal Service had no staffing flexibility. This is not a proper method of estimating either baseline costs or Full-Up costs. Tr. 8/2667.

#### B. Transportation Cost Estimate Issues

The Public Representative has identified several issues regarding types of trips that are included in witness Martin's analysis and her estimates of capacity reductions used in Bradley's calculations of cost savings. These issues influence both plant-to-post office and plant-to-plant transportation. A summary of those issues are as follows:

- Post office-to-plants trips are not considered by witness Martin. Tr. 4/1208. However, witness Bradley assumes that these trips are included with plant-to-post office trips. Tr. 8/ 2623.
- Witness Martin calculates reduction in post office-to-plant trip miles for affected trips only based on AMP studies. Tr. 8/2582. Witness Bradley assumes that she calculates the reduction in trip length for the entire country. Tr. 8/ 2623.
- Witness Martin calculates the reduction in plant-to-plant routes as a percentage of trips that will be eliminated. USPS-LR-N2012-1/77, workbook Plant-to-Plant Update Rev (4.30.12).xls, worksheet 'Summary'. Neither length of each trip or cost per mile for each trip is considered. Tr. 8/2577-2580. Witness Bradley assumes that she calculates the reduction in capacity measured in cubic foot miles of provided transportation and applies this percent reduction to his baseline. Tr. 5/1825-1827, *see also* USPS-T-10 at 32-33.

1. Issues concerning calculation of post office-to-plant cost savings

- a. Inconsistencies between witnesses Bradley and Martin

Witness Martin confirms that her analysis includes two parts of the Postal Service's transportation network – plant-to-plant network and plant-to-post office network, while “trips for originating mail that go from the post office to the plant” are not part of her “administrative responsibility.” Tr. 4/1207-08. Witness Martin confirms that post office-to-plant trips would also be impacted by proposed changes. *Id.* at 1208. She also states that she is not aware “of any witness or any testimony that describe” the potential changes in post office-to-plants trips “and what the cost effect of those changes could be.” *Id.*

Witness Bradley has a different understanding of post office-to-plant trips and their coverage by witness Martin's analysis. Witness Bradley states that “although we use the phrase plant to post office, it means both back and forth, from plants to post office and post office to plant.” Tr. 8/2623. As a result, witness Bradley assumes that 3.18 percent reduction in plant-to-post office trips is actually a reduction in both (plant-to-post office and post office-to-plant) trips.

Witness Martin confirms that the 3.18 percent reduction is a reduction in plant to post office miles for those facilities affected by consolidation. Tr. 8/2582. She also clarifies that the numbers in her spreadsheets contained data on the facilities from AMP studies from various locations, but those numbers are only from AMP studies from facilities affected by consolidation, not nationally. *Id.* at 2582-2853. Witness Martin confirms that she does not consider in her calculations facilities “that's neither gaining nor losing their miles.” *Id.* at 2582. The 3.18 percent figure illustrates the percent reduction only the portion of the plant-to-post office trips impacted by network rationalization and not the national network. It is clear that the national percent reduction in plant to post office miles would be lower.

Witness Bradley is also inconsistent with witness Martin in calculating the reduction in plant-to-post office miles. Witness Bradley states that his understanding of the 3.18 percent reduction in plant to post office miles is the “estimate of the reduction in plant to post office transportation across the country.” Tr. 8/2623.

b. Inconsistencies lead to overstatement of cost savings resulting from transportation

These inconsistencies between witnesses Bradley and Martin lead to an overestimation of cost savings as calculated in witness Bradley's library reference.<sup>28</sup>

First, as described in section a., above, witness Bradley understands 3.18 percent reduction of plant-to-post office trip miles affected by the proposed network consolidation as a "reduction in plant-to-post office portion of the network." USPS-ST-4 at 13. Then he applies this 3.18 percent reduction to the baseline calculated which includes "FY 2010 costs for intra-P&DC transportation, which provides plant-to-post office transportation." (USPS-T-10 at 37). Since only a smaller share of trips is impacted by the proposed rationalization, the actual percent reduction in post office-to-plant costs should be lower than in the baseline witness Bradley used for his calculations. The lower the share of impacted trips, the more witness Bradley's cost savings are overestimated.

Second, while witness Martin estimates a 3.18 percent reduction in trip miles for the trips in plant-to-post office network, witness Bradley applies this percent reduction to both the post office-to-plant network and the plant to post office network. Without proper analysis of the network it is impossible to say if applying this reduction to the post office-to-plant trips provides an accurate result. Even assuming that this number is a fair estimate, it also only represents facilities in certain AMP studies. Application of this factor to all post office-to-plant trips at a national level overestimates cost savings.

2. Issues concerning the calculation of plant-to-plant cost savings

Witness Bradley applies a 12.83 percent reduction in plant-to-plant trips provided by witness Martin in his calculation of plant-to-plant cost savings. He uses the methodology that establishes the relationship between cost and capacity, which he describes in his testimony

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<sup>28</sup> USPS-LR-N20121-1/93, workbook HCR.Highway.CostSavings.Revised.xls.

(See USPS-T-10 at 31-33.) and where “capacity is measured by cubic foot-miles of provided transportation.” *Id.* at 32. Witness Bradley confirms that by his understanding, the capacity reduction calculated by witness Martin and supplied to him was “in terms of cubic foot miles of transportation.” Tr. 5/1823.

Library Reference 77<sup>29</sup> shows that the 12.83 percent reduction is calculated “by looking at the current number of trips...and looking at the trips that could be eliminated...and then performing a calculation saying that the trips that would be eliminated would be 12.83 percent of the total.” Tr. 8/2576-2577. As a result, the percent reduction witness Bradley uses in his cost savings formula is actually the percent reduction in the number of trips and not the percent reduction in cubic foot miles of transportation as it states in his testimony. See USPS-T-10 at 32.

Such application might be reasonable if 12.83 percent decrease in the number of trips leads to a corresponding decrease in cubic foot miles. Witness Bradley explains that there should be a corresponding decrease, and such substitution should not make any difference to his calculations because “there’s a proportional relationship between the number of trips that the Postal Service has within say inter-area or inter-cluster and cubic foot miles.” Tr. 5/1825. However, there is no documentation for such an assertion in the record.

Witness Bradley clarifies that cubic foot miles are calculated by taking the number “of trucks times frequency, which is trips, times miles.” *Id.* at 1825. Based on this statement the formula for capacity estimated in cubic foot miles (cfm) of transportation (trucks) would appear as follows:

$$\text{Capacity (cfm)} = \text{Capacity of the Truck (cf)} \times \text{Trips} \times \text{Miles}$$

Based on this formula, in order to confirm that a change in capacity (measured in cubic foot miles) is actually equal to the change in the number of trips, one must first assume that all trucks have the same size of capacity (in square footage) and, second, all changes in

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<sup>29</sup> USPS-LR-N2012-1/77 (Workbook Plant\_to\_Plant\_Update\_Rev\_(4.30.12), Sheet ‘Summary’)

capacity would not depend on a change in miles. While the first assumption might be acceptable in general, the second assumption appears problematic. As witness Martin confirms, “some trips may be longer, some trips may be shorter. They vary in length.” Tr. 8/2577. She summarizes the analysis she performed while estimating 12.83 percent capacity reduction: “All I did was determine what would be a candidate that would be eliminated.” *Id.* at 2580.

Adapting the formula shown above, one can calculate the percentage change (in this case the reduction) in capacity as follows:

$$\Delta \text{ Capacity (cfm)} = \text{Capacity of the Truck (cf)} \times (\text{Trips base} \times \text{Miles base} - \text{Trips proposed} \times \text{Miles proposed})$$

and

$$\% \Delta \text{ Capacity (cfm)} = (\text{Trips base} \times \text{Miles base} - \text{Trips proposed} \times \text{Miles proposed}) / (\text{Trips base} \times \text{Miles base})$$

where:

Trips base/proposed = number of trips in the current/proposed network;

Miles base/proposed = miles in the current/proposed network

Based on these formulae, one observes that a percentage reduction in capacity is equal to a percentage reduction in trips *only* if the number of miles in the proposed network does not change compared to the current network. Therefore:

$$\% \Delta \text{ Capacity} = \% \Delta \text{ Trips} , \text{ If Miles proposed} = \text{Miles base}$$

and

$$\% \Delta \text{ Capacity (cfm)} \neq \% \Delta \text{ Trips, if Miles proposed} \neq \text{Miles base}$$

It is clear, therefore, that the capacity reduction witness Bradley applies in his cost savings estimates is actually a reduction in plant-to-plant trips without any consideration of



the actual capacity reduction. A change in capacity depends on both the change in the number of trips, and the change in number of miles. There is no evidence supporting the assumption that the percentage reduction in the number of plant-to-plant trips correlates to the percentage capacity reduction used by witness Bradley. To adequately substitute for a percentage reduction in capacity, witness Bradley should have accounted for both the percentage of trips reduced and the percentage change in network miles.

### C. Productivity Estimates in the MPNR

The Postal Service's cost savings estimate for the MPNR is in part due to productivity gains that it contends will occur in mail processing. Witness Neri relies almost exclusively on his operational expertise to determine where productivity could improve in the rationalized network. This section analyzes witness Neri's method, the subsequent use of witness Neri's estimates in witness Bradley's cumulative cost savings estimate, and proposes an alternate method to view productivity changes.

#### 1. Witness Neri's productivity improvement estimate

Witness Neri collected data for the period from September 12, 2011 through September 30, 2011 from WebEOR. He obtains hourly volumes for every hour of the day for the following mechanized sorting machines: Letters – DBCS, DIOSS, CIOSS; Flats – AFSM100 (all variations), UFSM; Packages – SPBS, APPS, APBS; FSS – FSS; and Cancellations – AFCS, AFCS200.

Witness Neri obtains, for each equipment set (Letter Sorting, Flat Sorting, Package Sorting and Cancellation), the total volume processed for each operation for each hour of the day during the sample period. He then converts the volume to hours using the TPH/hr values filed in ACR FY2010.<sup>30</sup> For each tour for each equipment set witness Neri calculates the

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<sup>30</sup> Docket No. ACR2011, USPS-ACR-FY2011-LR-23, Yscrub2011.xlsx.

maximum hours in a tour and determines the number of employees the Postal Service must employ in order to handle a peak hour in any tour. Witness Neri compares the maximum hours per tour to the hours that would be needed to process mail on each equipment set if total daily work hours were equally spread across each hour of the day. This “smoothed” value represents a situation where the work hours the Postal Service anticipates are identical for each tour. There would be no peaks or valleys, and no surplus labor.

Witness Neri calculates the percentage difference in hours needed based on a mail profile that varied by the hour, and a perfectly smooth profile as approximately 28 percent.<sup>31</sup> Witness Neri then equates the reduction in excess capacity and the improvement in productivity. He reduces his estimate of productivity improvement from 28 percent to 15 percent on average because

professional judgment led me to recognize that the full 28 percent reduction in staffing across all operations should be applied based on my understanding that not all operations will be perfectly distributed in the future network, as well as my consideration of many simplifications in the end-of-run analysis; therefore, I decided to decrease the estimate to the 15 percent overall productivity increase.

Tr. 5/1970.

Finally, witness Neri allocates the overall 15 percent productivity increase to different cost pools based on his experience as a manager of Mail Processing Operations. He finds it necessary to use his operations experience the most applying the average 15 percent productivity improvement to operations of non-mechanized cost pools, especially those involving preparation such as cross-docking. *Id.* at 2069.

## 2. Public Representative evaluation of witness Neri’s methodology

The Public Representative views witness Neri’s calculation of productivity improvement as problematic. Witness Weed states that there is no evidence that witness

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<sup>31</sup> See USPS-LR-N2012-1/50, LR 50 Materials Responsive to POIR 1, Question 7\_Set 2, LR.50.Preface.pdf.

Neri's estimate is based on a work sampling technique as is usually the case. Tr. 11/4193. Witness Weed maintains that if the amount of potential for productivity improvement were close to what witness Neri contends, the data would be reflected in the IOCS sampling system. *Id.* Witness Weed also uses data from witness Bradley's night differential calculations to compare the hourly profile of volume and hours, and found little difference, giving him further reason to doubt witness Neri's excess capacity estimate. *Id.* at 4195. He concludes by saying:

[M]y review of how witness Neri determined an idle time percentage that led him to make an estimate of available potential productivity improvement leads me to conclude that his estimate has no factual support. At best, he provided a hypothetical example of how much idle time would be available if one were to arbitrarily use a single data point (busiest hour) to determine the number of employees required to work during each eight-hour tour."

*Id.* at 4196-97.

Witness Raghavan testifies that witness Neri's excess capacity calculation rests upon two assumptions, neither of which is legitimate. First, it assumes that the mail profile will be perfectly smooth in the realigned network, but "it is unlikely that the workload would indeed be spread evenly over 24 hours." Tr. 10/3131 (Emphasis removed). It is clear that 24 hour workload smoothing is probably not achievable (given the windows proposed in Figure 8 of USPS-T-4). Thus the productivity improvement estimates as informed by USPS-LR-N2012-1/50 are likely to be significant overestimates. Witness Raghavan also explains that "[a] second factor is the arbitrary nature of the tours used." Tr. 10/3132. Witness Raghavan also finds fault with the rigid assumption that the Postal Service does not have any flexibility to meet the peak load on a tour, other than to hire the maximum complement needed to process the peak load, given the possibility of part-time, flexible workers. *Id.*

Witness Neri also miscalculates excess capacity, even as he has measured it. This miscalculation occurs because the hours for the three tours are from 6:00 AM to 1:00 PM, 2:00 PM to 9:00 PM, and 10:00 PM to 5:00 AM when he calculates the maximum hours needed for each tour, but when he calculates the "required need based on 8 hour intervals," he uses tours from 7:00 AM to 1:00 PM, 2:00 PM to 9:00 PM, and 10:00 PM to 5:00 AM (row

39 in the following cite). If he had consistently used the tours from row 43, the measurement of excess capacity would have been 20.6 percent rather than excess capacity.<sup>32</sup> USPS-LR-N2012-1/50 - Materials Responsive to POIR 1, Question 7\_Set 2, LR50.xlsx, "Sheet1."

Witness Witt and witness Neri maintain that judgment is required when estimating possible productivity improvements for prep operations and cross-docking, etc. For example, a clerk using a forklift to carry trays may just as easily carry six trays as four. Thus, such operations have the potential of having above-average productivity improvements. But a non-volume operation is not able to fully absorb any increase in volume. Eventually the worker's forklift will be full, and it will be necessary to use another worker driving another forklift for the residue. Reaching capacity in one container and requiring another would lead one to believe the cost function would be a "step function."

For the previous reasons, the Public Representative uses witness Neri's estimates of productivity improvements, but makes two modifications. Witness Neri allocates productivity improvements from an above-average of 15 percent productivity improvement, which is the transformation of 28 percent excess capacity into productivity terms. But if excess capacity is 20.6 percent, and one transforms excess capacity by the same amount as witness Neri, average productivity increases by 11 percent.<sup>33</sup> The Public Representative further reduces Neri's productivity values by 25 percent to account for the "step function" nature of preparation operations. Consequently, the estimate for productivity of non-volume operations is reduced by a factor of 0.58.<sup>34</sup>

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<sup>32</sup> Witness Neri response to a PRC staff interrogatory about this discrepancy is inapposite. He stated that "[t]he cited library reference does not identify traditional shifts. The Postal Service chose these particular timeframes and not the traditional shifts because the shifts were standardized to report volumes based on processing and delivery needs. In practice, employees are scheduled for a more varied series of shifts to cover each day." Tr. 4/1993. Whether or not the hours used to separate tours are "traditional," they should be consistent.

<sup>33</sup>  $15\% * (20.06/28.06) = 11\%$ .

<sup>34</sup>  $.75 * 11\% = .58$ .

### 3. Witness Bradley's estimate of mail processing cost savings

Section 2 above discusses the methodological weaknesses of witness Neri's productivity estimates. This section compares the cost savings estimated by witness Bradley using the productivity changes witness Neri provided him, to the cost savings that would result if witness Bradley had used the productivity changes estimated by the Public Representative. The Public Representative uses the following procedure to calculate the productivity change for each of the 31 operations witness Bradley uses.

First, the Public Representative builds upon the methodology employed by witness Weed to estimate productivity. See Tr. 11/4187-4200. Witness Weed calculates the productivity of plants that will remain open ("gaining plants") and plants that are slated to be closed ("losing plants"). National Distribution Centers (NDCs), International Service Centers (ISCs), or non-MODS plants are not included in the analysis to make his analysis comparable to that of witness Bradley.

He first forms his own cost pool volumes and hours using data from various MODS operations.<sup>35</sup> He calculates the productivity of a cost pool as its volume (total pieces handled (TPH)), divided by their associated hours from the Mail Operating Data System (MODS). PRCWIT-LR-2 PIR 3 OD Plants.xlsx, "Category Summary." He then identifies the volume that will be transferred from losing plants to gaining plants by cost pool, and divides this volume by the gaining plants' productivity for that pool in order to obtain the number of hours the gaining plant will need in order to process the transferred volume for each of his constructed cost pools.<sup>36</sup>

One may calculate the percent productivity change of each cost pool due to the MPNR by comparing the productivity of each cost pool before the MPNR, and the productivity of each cost pool in gaining plants after the MPNR.

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<sup>35</sup> These cost pools differ from those used by witness Bradley and conform more to the operational flow of the mail.

<sup>36</sup> Tr. 11/4184, Witness Weed refers to this method as the "Likely Worst Case outcome."

Witness Weed does not make this last calculation, but the Public Representative did. The Public Representative forms cost pools that conform to those witness Bradley employs, and explicitly accounts for possible productivity improvements in what witness Weed refers to as “non-volume operations,” which are primarily preparation and oversight operations. Tr. 11/4180-81. The Public Representative hopes that these modifications will add to the record. It employs MODS data provided by the Postal Service spanning all of FY 2010, to form the same cost pools as those used by witness Bradley to calculate the mail processing cost savings from the MPNR. Tr. 5/1793-1794.<sup>37</sup> Unlike witness Weed, the Public Representative considers volumes recorded as Non-Add Total Pieces Handled (NA TPH) to be valid volumes for purposes of calculating cost pool productivities under certain circumstances. NA TPH are often counts of actual pieces handled. The MODS Manual considers NA TPH to be the “TPH count in non-distribution operations [and] is recorded as TPH but not added to the bottom line for mail processing distribution — thus, the name non-add total pieces handled (NA TPH).”<sup>38</sup>

NA TPH volumes are valid for purposes of deriving the volume of a cost pool, but since it counts pieces, bundles, sacks, trays, containers, among other activities of an operation, the counts may only be aggregated across operations in the same cost pool, if each operation measures the same object or activity (e.g. the count of tags placed on sacks, or the count of trays cross-docked). Since there is no guarantee that this is the case, NA TPH volumes are only used for MODS operations where a clerk directly counted the number of pieces handled, or WebEOR is used to convert the number of bundles, sacks, or trays handled to piece counts.<sup>39</sup> The Public Representative considers such NA TPH counts to be the piece volumes of an operation. Operation hours are always recorded, unless the clerk is

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<sup>37</sup> USPS-LR-N2012-1/NP10, modstour2010-np.csv.

<sup>38</sup> U.S. Postal Service, Management Operating Data System, Handbook M-32, March 2009 (MODS Manual), at Section 3, page 4.

<sup>39</sup> Otherwise, an operation that recorded NA TPH volumes was considered a “non-volume” operation.

directed to assign them to another operation, or they are not valid for some other reason.<sup>40</sup> Operations where the clerk was directed not to record volumes are also considered “no-volume” operations. No-volume operations are separated from the piece count operations that comprised the rest of the cost pool. This practice allows one to have greater confidence in the estimate of productivities of more cost pools than witness Weed, even though he uses NA TPH volumes when they are available. Operation hours and volumes for the operations that comprised the same cost pools used by witness Bradley are aggregated if they are volume operations or if the NA TPH volumes are piece counts. Hours and volumes that might be contained in non-volume operations are made to equal zero and placed in a temporary, separate cost pool.<sup>41</sup>

In order to retain the influence of the no-volume part of a cost pool, the Public Representative uses witness Neri’s estimate of productivity improvement for the cost pool in which the operation was located. Such a cost pool was termed a “divided” cost pool.<sup>42</sup> For example, the cost pool “OpenPref” is comprised of MODS volume and non-volume operations as shown in Table IV-1 below. Witness Neri’s estimate of the productivity improvement of Opening Preferred Mail was applied only to the non-volume operations in this cost pool.

Table IV-1  
Cost Pool “OpenPref by MODS Operation

Volume Operations	Non Volume Operations
110,111,112,180,181,328,329,343,344	84,328,329

Doing so allows a limited employment of managerial expertise. Limiting *qualitative* impressions of possible productivity improvements is important because productivity

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<sup>40</sup> MODS Manual at 148.

<sup>41</sup> The SAS log of the program that formed the volume and non-volume cost pools is available in Appendix 1. The data source was USPS-N2012-1-LR-NP10, modstour2010-np.csv.

<sup>42</sup> A divided cost pool is comprised of a combination of non-volume operations and volume operations, while a non-volume cost pool is comprised solely of non-volume operations.

improvements are used to make very specific *quantitative* calculations central to the magnitude of the benefits that would be obtained by implementing the MPNR proposal.

Volumes and hours for each *volume* cost pool are aggregated, and the productivity “before realignment” and “after realignment” is calculated. The productivity change of the non-volume portion of each cost pool is taken from the modified productivity improvement estimates of witness Neri. The Public Representative then takes an hour-weighted average of the two productivity changes for each divided cost pool in order to derive a single “after MPNR” productivity change for each of the 31 cost pools used by witness Bradley. This allows the Public Representative to calculate the productivity change due to the MPNR. Table IV-2 below compares the estimates of the productivity changes of the cost pools employed by witness Bradley and the Public Representative.



**Table IV-2**  
**Percentage Productivity Changes By Cost Pool**  
**Comparison of USPS and to PR Estimates**

<b>Cost Pool</b>	<b>PR</b>	<b>USPS</b>
BCS/DBCS	-2.2%	22.0%
OCR	9.8%	22.0%
AFSM100	-1.7%	15.0%
FSM 1000	-33.2%	15.0%
Mechanized Parcels	68.6%	8.0%
SPBS - Non Priority	1.1%	8.0%
SPBS - Priority	16.1%	8.0%
Mechanical Sort - Sack Outside	-8.4%	15.0%
Mechanical Tray Sorter / Robotics	8.3%	15.0%
Manual Flats	-6.3%	3.0%
Manual Letters	-5.5%	3.0%
Manual Parcels	-29.8%	3.0%
Manual Priority	-4.6%	3.0%
Cancellation	-1.9%	15.0%
Dispatch	-6.3%	20.0%
Flats Preparation	3.4%	0.0%
Mail Preparation - metered	9.3%	0.0%
Opening Unit - BBM	-1.0%	15.0%
Opening Unit - Preferred Mail	-1.3%	15.0%
Opening - Manual Transport	8.3%	15.0%
Platform	11.0%	20.0%
Pouching Operations	13.8%	25.0%
Presort	2.9%	25.0%
Manual Sort - Sack Outside	13.8%	25.0%
Air Contract DCS and incoming/SWYB	2.1%	0.0%
Business Reply / Postage Due	1.2%	0.0%
Registry	3.2%	50.0%
Damaged Parcel Rewrap	0.0%	0.0%
Empty Equipment	5.5%	10.0%
Miscellaneous	1.0%	10.0%
Mail Processing Support	13.8%	25.0%

*Sources:* USPS-N2012-1-T-4 and calculations made by the Public Representative using USPS-LR-N2012-1/NP10, modstour2010-np.csv to calculate percentage changes in productivity by cost pool using the method described above.

A quick examination of Table IV-2 shows that most of the productivity improvements estimated by witness Neri are substantially greater those estimated by the Public Representative. In fact, 17 of the 31 Postal Service estimates of cost pool productivity

improvements were at least five times larger than those estimated by the Public Representative.

The substantially lower productivity improvements compared to those witness Neri provided witness Bradley, have substantial implications for the impact of network realignment on the mail processing cost estimates if one were to substitute them into witness Bradley's mail processing cost savings library reference.<sup>43</sup> The productivity savings witness Bradley estimates are the largest single component of cost savings estimated from the network realignment. \$964 million, or 37.5 percent of total cost savings would have been saved in FY2010 had the proposed network realignment been in place for Fiscal Year 2010. Tr. 5/1833. Witness Bradley uses the mail processing productivity improvements witness Neri provides to him as part of his estimate of mail processing cost savings from the MPNR. Tr. 5/1836.

It should come as no surprise that using the Public Representative's productivity changes would substantially alter the savings from productivity improvements, as well as the savings from activities that are indirectly related to productivity changes, such as Supervisor savings, In-Plant Support savings, Indirect Cost savings and Premium Pay savings. In order to determine the effect, the Public Representative substitutes its estimates of the productivity improvement or decline for each cost pool into the "Productivity," sheet of USPS-LR-20, Mail Processing Labor Cost Savings.xls. Table IV-3 shows the results for direct labor savings. Witness Bradley calculated \$964 million in mail processing savings on direct labor as a result of using the productivity improvements provided by witness Neri. In contrast, the Public Representative's calculated productivity changes cause mail processing direct labor costs to increase nearly by nearly \$69.3 million. Mail processing operations' costs decline by nearly \$1.4 billion according to witness Bradley, while the Public Representative estimates costs savings of only \$338 million. The Public Representative estimates higher cost savings than

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<sup>43</sup> USPS-N2012-1-LR20, MP\_Labor\_Savings, Mail Processing Labor Cost Savings.xls.

witness Weed. But because it gives a rough estimate to “no-volume” operations productivity changes, and breaks “no-volume” operations out more finely than witness Weed, the Public Representative considers this a reasonable estimate to use for weighing the cost savings from the MPNR against its valuation of the concomitant service reduction.

Table IV-3  
Cost Changes by Operations Caused by Productivity Changes (\$000)

Cost Pool	Cost Savings From Eliminating Labor Costs at Losing Plants	Productivity Induced Cost Change	Cost Savings
BCS/DBCS	\$3,542	(\$40,874)	(\$37,332)
OCR	\$17	\$857	\$873
AFSM100	\$2,377	(\$11,613)	(\$9,236)
FSM 1000	\$547	(\$22,477)	(\$21,929)
Mechanized Parcels	\$150	\$2,819	\$2,969
SPBS - Non Priority	\$2,006	\$3,051	\$5,057
SPBS - Priority	\$1,613	\$37,231	\$38,844
Mechanical Sort - Sack Outside	\$474	(\$2,757)	(\$2,283)
Mechanical Tray Sorter / Robotics	\$2,824	\$20,845	\$23,669
Manual Flats	\$829	(\$12,922)	(\$12,093)
Manual Letters	\$2,258	(\$27,834)	(\$25,577)
Manual Parcels	\$754	(\$14,974)	(\$14,220)
Manual Priority	\$3,438	(\$11,628)	(\$8,190)
Cancellation	\$1,351	(\$5,441)	(\$4,090)
Dispatch	\$874	(\$10,315)	(\$9,440)
Flats Preparation	\$65	\$2,741	\$2,806
Mail Preparation - metered	\$165	\$1,824	\$1,989
Opening Unit - BBM	\$665	(\$1,011)	(\$347)
Opening Unit - Preferred Mail	\$2,451	(\$3,858)	(\$1,408)
Opening - Manual transport	\$842	\$5,695	\$6,538
Platform	\$35,442	\$129,035	\$164,478
Pouching Operations	\$966	\$7,174	\$8,141
Presort	\$402	\$2,152	\$2,553
Manual Sort - Sack Outside	\$730	\$6,758	\$7,488
Air Contract DCS and	\$232	\$1,311	\$1,543
Business Reply / Postage Due	\$255	\$244	\$499
Registry	\$12,401	\$2,495	\$14,896
Damaged Parcel Rewrap	\$151	\$0	\$151
Empty Equipment	\$57	\$1,646	\$1,703
Miscellaneous	\$1,353	\$890	\$2,243
Mail Processing Support	\$3,329	\$8,262	\$11,591
<b>Total</b>	<b>\$82,559</b>	<b>\$69,327</b>	<b>\$151,810</b>

Sources: USPS-N2012-1-LR20, MP\_Labor\_Savings, Mail Processing Labor Cost Savings.xls, “Productivity Gains,” and Public Representative estimates of percentage change in cost pool productivities substituted in witness Bradley’s Mail Process Labor Cost Savings file.

Whereas witness Weed estimates a cost increase of \$169 million using hours and volumes in non-volume operations (Tr. 11/4208), the Public Representative estimates the Postal Service's direct labor mail processing costs will be reduced by almost \$152 million.

This difference in direct labor cost savings also flows through the spreadsheets to affect indirect mail processing labor costs. Because no other changes were made to witness Bradley's spreadsheet, the summary of all savings is automatically calculated. Table IV-4, below compares the Public Representative's estimates with those of the Postal Service.

Table IV-4  
Comparison of Mail Processing Labor Cost Savings (\$000)

Category	PR Savings	USPS Savings
Workload Transfer Cost Reduction	\$82,559	\$82,559
Productivity Gain Cost Increase	\$69,327	\$964,159
Supervisor Cost Reduction	\$9,638	\$66,423
Plant Management Cost reduction	\$18,059	\$18,059
In Plant Support Cost Increase	\$48,700	\$48,700
Indirect Cost Reduction	\$27,246	\$140,823
Premium Pay Reduction	\$82,137	\$71,807
Total Cost Savings	\$337,666	\$1,392,529

Sources: USPS-N2012-1-LR-20, Mail Processing Cost Savings and PR-Final Productivity Realignment.xlsx.

The savings estimated by the Public Representative, (approximately \$338 million) is substantially less than the \$1.4 billion savings estimated by the Postal Service.

Although witness Bradley stated that he "can speak to it [witness Neri's method of determining productivity changes] in general terms," (Tr. 5/1836), he did not examine or evaluate the soundness of witness Neri's method of determining productivity improvements. *Id.* at 1840-41. The manner in which Neri uses the productivity estimates and other calculations are not objectionable, but the Public Representative concludes that given the magnitude of the service changes and the associated risks to the Postal Service, witness Bradley did not exercise sound methodology when he accepted witness Neri's cost pool productivity changes. The Public Representative maintains, along with the testimony of Commission witnesses Weed and Matz, witness Hora's Rebuttal Testimony (Tr. 10/3335), and witness Bentley's Rebuttal Testimony (*Id.* at 3446), that the cost savings from the

proposed network realignment will be substantially lower than presented by the Postal Service, and agrees with witness Kacha's Rebuttal Testimony (Tr. 11/3933), that the reduction in service quality will be substantial. *Id.* at 3937.

## V. OPTIMIZATION OF THE MAIL PROCESSING NETWORK

This chapter examines the Postal Service's efforts to model and optimize its mail processing network. Specifically, this chapter discusses whether the Postal Service appropriately and fully utilized the modeling and optimization tools available to it. The Public Representative notes that multiple parties express concerns with the MPNR, especially as relates to witnesses Rosenberg and Neri. Those concerns may be summarized in the following questions:

- Did witness Rosenberg validate the models she employed?
- Did the optimization techniques witness Rosenberg employed properly integrate management expertise into the modeling process?
- Did witness Rosenberg's modeling incorporate all of the essential optimization parameters?
- Is it appropriate to use machine throughputs rather than MODS, TPH/hr data in the Scoring Tool and Logic Net?

To answer these questions, the remainder of this chapter examines each of the three modeling tools (Scoring Tool, Logic Net, and Detailed Equipment Modeling) the Postal Service uses.

### A. The Scoring Tool

The Postal Service uses the Scoring Tool as an analytical tool used to determine whether it would be operationally feasible to eliminate overnight delivery service and extend the operational windows for mail processing. This section describes the Scoring Tool and discusses whether or not the Scoring Tool was validated.

#### 1. Use of the Scoring Tool

Witness Rosenberg uses an Excel program she terms the "Scoring Tool," which iterates a range and combination of possible values of collection to cancellation time (C2C), Delivery Point Sequencing (DPS) to delivery time (D2D), travel times between collection points, mail processing plants, and delivery units, to evaluate the feasibility of expanding the

operating windows, travel times between collection points, and distance between mail processing centers and delivery units. If a combination of input values meets a variety of conditions, such as determining that the last collection trip arrived before critical entry time, or less letter automation was required, and transportation and mail processing savings could occur under these conditions, it was considered a feasible iteration, and saved in a "Results" worksheet. USPS-T-3, at 8-12. She found that when the DPS window was set at 16 hours, and cancellation and outgoing windows varied between 6 to 15 hours, there was an iteration which was among the 25 highest "high-level" savings. *Id.* She concluded that elimination of overnight delivery service and use of a 16 hour DPS window was feasible.

## 2. Validation of the Scoring Tool

When using quantitative tools to determine whether it is feasible or recommended to undertake a major operational change of the sort the Postal Service has proposed in this case, it is important to validate the tool.<sup>44</sup> Witness Raghavan noted that witness Rosenberg did not validate the results of her Scoring Tool. The Scoring Tool was developed to gain a high level understanding if the elimination of overnight service and the expansion of the DPS window were feasible and likely to reduce the number of needed mail processing plants. In this case, witness Raghavan states that an appropriate method of validating this tool would be to see if the current number of plants would be calculated if values were altered to conform to existing windows and service standards. He finds that "the number of facilities [produced by the tool] far exceeds the number of mail processing facilities currently operating." Tr. 10/3112. Consequently, he is unable to validate the scoring tool. Closer examination of the tool shows that the number of facilities it produced "was simply a function of the C2C/D2D trip hours and did not depend on the length of operating windows or

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<sup>44</sup> See, Tr. 11/3936. "To provide sound results, the network simulation model must use reliable data, closely replicate reality, and also be calibrated against known operational conditions. USPS-4 provided FY2010 operational data and parameters as well as operating conditions, are faithfully represented to evaluate different network configurations in terms of their effect on service performance and costs."

workload volume.” *Id.* at 3113. Thus, while it is legitimate to perform a high level analysis as was performed using the Scoring Tool, it still should be capable of generally reproducing the *status quo ante*. This is a substantial flaw in a tool meant to determine the feasibility of various operating windows and the Public Representative concludes that although the idea of using a Scoring Tool was on the right track, its inability to come close to reproducing the current number of plants under current conditions raises the issue that even the high level results it produced are too flawed to use.

#### B. Logic Net Optimization Tool

The Postal Service uses the Logic Net optimization tool to determine, if overnight delivery service is curtailed and the DPS operating window is opened, the minimum number of mail processing plants that would be required to process FY 2010 volumes. The tool also examines the location of processing plants, and the links between plants including mode of transportation to minimize operational costs.

##### 1. Purpose of Logic Net

Witness Rosenberg describes the optimization problem she employed Logic Net to solve as how to start with a network with 476 current sites with an overnight delivery service, remove the overnight service, and then determine: the minimum number of plants (nodes) that would remain active; the number of 3-digit ZIP Codes (volume) assigned to each plant, given the constraints that the distance between a processing facility and Post Offices serving the assigned 3-digit ZIP Codes could not be more than 200 miles apart; and the need to minimize the cost of transporting mail back and forth from the plant to the 3 digit Post Offices serving the 3-digit ZIP Codes assigned to the plant. USPS-T-3, at 12-13. The Logic Net model determined that costs would be minimized by retaining 177 of the existing 476 plants. *Id.* at 17.



## 2. Validation of the Logic Net optimized results

As is the case with the Scoring Tool, in a case where a model is used to determine the optimal number of plants by changing a condition, in this case overnight delivery service, a legitimate validation method is to use the same volumes, optimize the network under current service standards and determine whether the number of optimal plants is reasonably close to the current number of plants. Witness Rosenberg does not perform a validation of this sort, and mentions at numerous places that this was not a task to which she was assigned by her managers, or which would conform to the elimination of overnight service. Tr. 4/1269, 1273, 1298, 1303, 1308, 1370.

Witness Raghavan performs this type of validation on the Logic Net model, using the same volumes, facility costs, and transportation costs used by witness Rosenberg. Optimization is accomplished by modifying certain aspects of the model in order to reproduce existing service standards, including the need for an outgoing secondary sort. He tests two modifications to reproduce existing service standards: 1) using witness Rosenberg's assignment of 3-digit ZIP Codes to mileage bands and 2) modifying witness Rosenberg's assignment of 3-digit ZIP Codes to reflect the minimum distance between a 3-digit ZIP Code and a plant, which turned out to be 130 miles. Tr. 10/3142. He obtains an optimal number of 239 plants in the first scenario and 199 in the second scenario. Tr. 10/3146. As is the case with the Scoring Tool, when Logic Net is used under existing service standards, it does not come close to reproducing the existing number of plants. It produces approximately one-half of the existing number of plants even without eliminating overnight delivery service.

This calculation is a noteworthy result. It leads to the possible conclusion that the Postal Service could optimize its mail processing network, eliminate approximately one-half of its existing plants, and retain existing service standards. As discussed by witnesses Crew, and NPMHU's witnesses, high service standards reflect public confidence in the Postal Service, and the elimination of overnight delivery would reduce consumer welfare. The overnight delivery standard is something only the Postal Service provides, so the products provided under this standard might be considered "flagship" products. Had the Postal

Service validated Logic Net Model's application to the elimination of overnight delivery service, it might have realized that it could retain its brand image and save nearly as much money as consolidating under reduced service standards. It is hard to deny that the path taken by the Postal Service is riskier than consolidation and the retention of existing service standards. The Commission should encourage the Postal Service to continue solving optimization problems, and test whether the conditions altered by an optimization run are validated as being necessary.

### 3. Use of management expertise in the modeling process

Scattered throughout witness Rosenberg's testimony, interrogatory responses, and oral cross examination are statements that her interaction as a quantitative modeler with management operations experts was iterative. See USPS-T-3, at 3, 17; see also Tr. 4/1348-63, 1368, 1370-71, 1373-74, 1485, and 1508. A careful examination of her descriptions shows that iteration does not accurately describe her modeling and its relation with operations managers.

Most quantitative experts would understand "iteration between quantitative modeling and expert advice" as a process whereby the results of a model are presented to field experts who identify assumptions in the model that do not properly or fully capture the manner in which their operations are run, or in which operations in general are run. The modeler then would modify model assumptions or constraints to incorporate this additional information, and rerun the initial model, using more certain information. Tr. 10/3116.

Witness Rosenberg did not employ this definition of iteration. Rather, she accepted changes proposed by operations experts, but only incorporated them into the later stage of analysis. Tr. 4/1332. For example, the cancellation operating window used in Logic Net is 12 hours (USPS-T-3, at 12), yet, when she performs her "Detailed Equipment Modeling," she accepts the 7 hour cancellation window recommended during "local insight," from managers. USPS-T-3 at, 23; Tr. 4/1308.

Witness Raghavan testifies:

Once the cancellation windows were shortened...it would have been prudent to rerun the Logic Net optimization model. A longer window [as was the case in Logic Net modeling] effectively increases the capacity of the facilities. Since the windows were shortened, it would result in a solution requiring more than the 177 processing facilities activated by the Logic Net optimization model.

Tr. 10/3116.

The other noteworthy example is the number of plants “revived” by local insight. Local conditions played a very large role in whether a plant chosen to be open or closed by Logic Net was determined to be the correct decision. For example, a plant capable of handling a large volume of traffic might be chosen by Logic Net, but its location in a downtown center made it a poor choice once the modeling team solicited transportation conditions from local operations experts and plant managers. Tr. 4/1348. Witness Rosenberg notes that “[f]or letter processing plant to 3-digit ZIP Code assignments, 45 percent of the ZIP Code assignments were modified.” USPS-T-3, at 20. The Public Representative concludes that the Postal Service’s use of Logic Net was on the right track, but because it fails to include plant-to-plant travel distances, is not validated, and does not use standard iteration methods, Logic Net was not effectively or fully utilized.

#### 4. Transportation flaws in Logic Net

The manner in which witness Rosenberg integrated Transportation issues suffers from several notable weaknesses. First, transportation costs, including whether the mode of transportation is highway or air transportation, are not optimized in Logic Net. Tr. 10/3114. Witness Bradley devotes two Library References to the changes in air transportation and highway transportation costs that would occur if the MPNR were implemented. This is a substantial weakness, as noted by witness Raghavan:

In the optimization problem there is a natural tension between the plant to plant transportation cost and the post office (3-digit ZIP Code) to plant transportation cost. If the plant to plant cost dominates, then the model will open plants closer to each other and have longer plant to post office links. If the post office to plant cost dominates, then

the plants will be located farther from each other and closer to the post office. When these costs are closer to each other the tension between them determines the solution.

*Id.* at 3115. In addition, the different mail flows between originating and destinating traffic to a 3 digit ZIP Code affect transportation costs. Both should have been explicitly incorporated into Logic Net modeling. Witness Rosenberg considers only the originating traffic flow, or considers traffic originating from a 3-digit ZIP Code equal to the traffic destinating to it. USPS-T-3, at 16. This assumption cannot be correct because turn-around mail originates at a plant serving a 3-digit ZIP Code, but does not destinate at another plant. The amount of turn-around mail is an important factor determining transportation cost and the efficient use of different modes of transportation.

### C. Witness Rosenberg's Detailed Equipment Modeling

Witness Rosenberg determines whether sufficient mail processing equipment to process FY 2010 volumes could be distributed to the plants remaining open after the network rationalization effort. She uses detailed equipment modeling as a tool to fulfill this purpose.

#### 1. Calculation of the peak load factor

The number of different machines estimated as being needed in the realigned network, substantially depended upon each machine's ability to handle peak load volumes on any given day. Witness Rosenberg estimated the peak load volumes of different operations, including the AFCS, DBCS, and AFSM100, APPS and APBS, by taking the volume of the day with the 95<sup>th</sup> percentile highest daily volume for each plant for the DBCS during FY2010, the 75<sup>th</sup> percentile highest day for the AFCS, and the 118<sup>th</sup> percentile highest day for APPS and APBS, and dividing each site's percentile peak day volume by each site's average daily volume for the year. This yielded the peak load factor for each plant for each of the machines mentioned above. The values were then averaged to obtain a single peak load factor for

each type of machine USPS-T-3, at 21-22, 26, 30. This single factor was then multiplied by annual average volume to determine system-wide peak volume.<sup>45</sup>

There are several problems with the calculation itself and the use of a volume less than the peak volume. First, the national peak load factor for a machine is a simple average from all plants. Dividing the 95<sup>th</sup> percentile day for each site by the average annual volume for each site will somewhat account for different average daily volumes and 95<sup>th</sup> percentile day volumes across plants. However, the peak load factor for each plant will not equal the average peak load factor unless all plants have the same distribution of volume for each machine. For some, the national average will yield a peak substantially below their peak for an unknown number of plants, resulting in a shortage of machines, and for others it will be substantially above their peak, resulting in excess machine capacity for an unknown number of plants.

For those plants with peak load factors above the national average, this method is going to exacerbate the second problem, which is ignoring the volumes on the 96<sup>th</sup> through 99<sup>th</sup> percentile days. The Postal Service provided witness Raghavan data on the peak load factors for the 96<sup>th</sup> through the 99<sup>th</sup> percentile days for cancellation, outgoing primary letters, DPS letters, outgoing primary flats, incoming primary flats, and incoming secondary flats. Tr. 10/3121. The data show a large discrepancy between the 95<sup>th</sup> percentile peak load factor and the 99<sup>th</sup> percent peak load factors. For example for Outgoing Primary Letters, the 99<sup>th</sup> percentile day had a peak factor of 233 percent, while the peak factor for the 95<sup>th</sup> percentile day was 155 percent. *Id.*

Witness Raghavan explains that using a peak of the 95<sup>th</sup> rather than the 99<sup>th</sup> percentile day could lead to the inability to handle successive days with peaks above the 95<sup>th</sup> percentile. He suggests it may be appropriate to use a day above the 95<sup>th</sup> percentile. *Id.* Witness Rosenberg states that using the 95<sup>th</sup> percentile day will allow the stationing of machines to

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<sup>45</sup> For ease of exposition, the case of the DBCS, the most important machine, and which used the 95<sup>th</sup> percentile day, will be used hereinafter.

handle the volumes of all but the 14 or 15 highest days, but does not take into account that the number of problematic days will be increased by the number of plants with individual peak load factors above the national average. USPS-T-3, at 21. The extent to which this occurs is not in the record. The Public Representative concludes that it is possible using the 95<sup>th</sup> percentile day in the manner in which witness Rosenberg calculated it, carries a risk that might significantly understate peaking problems.<sup>46</sup>

## 2. Estimation of staging space in the new operating environment

Witness Rosenberg used a staging space requirement equal to the requirement for the current network, multiplied by 25 percent, “to ensure there was adequate staging room under this new concept when all volume is available at the start of the windows.” USPS-T-3, at 18. She does not specifically explain what new conditions this additional 25 percent “fudge-factor” are supposed to encompass. Witness Raghavan notes that one outcome of rationalization effort will be the need to store First-Class Single Piece turnaround mail. This is mail that would have gone out the same day under current service standards, but will need to be stored under the proposed environment. It is possible the 25 percent factor will accommodate peaking problems for this and all other conditions unique to the realigned network. But Witness Matz notes that turnaround volume is 74 percent of the total overnight delivery volume. Tr. 11/4074. Since plant space is based on peak load volume factors, which may be skewed and result in many more plants with peaking problems than expected, the Public Representative recommends the Commission view the Postal Service’s estimates of the reduction in the number of machines and plants in the new operating environment as aggressively optimistic. The Public Representative agrees with the Postal Service that some inflation factor is necessary, but the 25 percent factor used is not sufficiently explained or

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<sup>46</sup> The same problem applies to flat and parcel sorting machines. Tr. 10/3121.

developed to determine if it is adequate to account for all the additional space requirements in the modified environment.

3. The rationalization effort does not employ a simulation analysis

Given the magnitude and complexity of the modeling effort used and the changes to the mail processing and transportation networks that will flow from these models, it is concerning that the Postal Service did not attempt simulate how these networks will be different because of the difference in how mail inventories will flow through the mail processing network). Doing so would provide all parties a greater degree of confidence in the modified processing environment if the simulation shows it to be feasible. APWU witness Kacha summarizes the point well: "Model calibration is a prerequisite to gain confidence in the response of the network simulation model and the insights that it helps draw. Calibration must be established against a known benchmark." Tr. 11/3959.

4. Total pieces handled per hour vs. throughput as a measure of capacity

Witness Rosenberg used throughputs of several machines, by operation, to make necessary calculations using the Scoring Tool, which determined feasible windows for delivery point sequencing letters. She also used machine throughput in her Detailed Equipment Modeling, which determined the number of machines needed to handle the volume assigned to a plant, as well as the plant size. USP-T-3, at 7, 18. She defined throughput as the national number of "pieces sorted on a machine ...[divided by]... the machine's run time from End of Run (WebEOR). These data were used as a benchmark to set throughput expectations that would occur under the new operating environment where all mail volume is available prior to initiation of a sorting operation." USPS-T-3, at 7. Witness Rosenberg did not use the machine productivities provided by the Postal Service in its Annual Compliance Reviews (ACR), which is drawn from MODS data. USPS-ACR-FY2011-LR-23, Yscrub2011.xlsx. Table V-1 below compares several machine operation productivities used by witness Rosenberg to comparable ones calculated by the Postal

Service in its most recent ACR. The same productivities are also used in the worksharing models for First-Class and Standard letters.

Table V-1  
Comparison of Throughputs to MODS Productivities

Machine Operation	Throughput	MODS TPH/hr	Magnitude of Difference
(A)	(B)	(C)	C/B
L-OGP	30,000	8,060	3.7
L-INP	30,000	6,246	4.8
L-INS	35,000	8,765	4.0

Sources: USPS-LR 17, Zip Assignment Local Insight.xls, "Model MODS" and USPS-ACR-FY2011-LR-23, Yscrub2011.xlsx, "Table."

One sees that the throughputs used by the Postal Service are approximately 4 times greater than MODS productivities. What accounts for this difference? One possibility is that the hours used to calculate MODS productivities include down time and idle time in addition to run time, while throughput is based only on run time. Library reference 44, in response to PR-USPS-T4-1(b) provides annual daily data on down time, idle time, and operating time. The average operating time is 33,602 hours, while the average run time is 21,315 hours, values which differ by a factor of 1.6. If MODS counted the same volumes as the WebEOR data, but recorded operating time, MODS productivities would be less than throughput by a factor of 1.6. But even with this modification, throughput would still be more than two times too large. An additional possibility is that after a run is completed, a worker may not clock out of the machine sorting operation and may be employed to perform some non-sorting operation he or she did not clock into. If true, this would tend to reduce MODS mechanized sorting productivities in relation to throughput. However, during oral cross examination, witness Neri asserted that there is very little time between machine runs and so there would be a very small amount of mis-clocking of the sort mentioned here that could occur. Tr. 5/2068.

The Public Representative is left to conclude that the key to the difference is the statement by witness Rosenberg that runtime data "were used as a benchmark to set throughput expectations that would occur under the new operating environment where all mail volume is available prior to initiation of a sorting operation." Tr. 4/1333 (emphasis



removed). The Public Representative concludes that the witness Rosenberg's use of throughput means the Postal Service is expecting productivity levels for the above-mentioned machines to nearly double in the modified network due to the new and more "smoothed" mail profiles that are expected.

The Public Representative believes the expected productivity improvements implicit in witness Rosenberg's models are unfounded and unreasonably high. They are much higher than witness Neri's conclusion that productivity will increase by 15 percent on average. The impact of incorporating a productivity improvement that is several degrees of magnitude larger than current productivities would tend to overstate the number of plants that can be reduced in Logic Net. Conversely, it may also explain why witness Raghavan's validation of Logic Net produced many fewer plants than currently exist. The Public Representative is concerned that the Postal Service's expected reduction in plants, and the concomitant savings, are based upon an unrealistic expectation in productivity improvements implicit in witness Rosenberg's analyses.

## VI. CONCLUSION

Chapter II of this brief demonstrates that the Postal Service has not addressed the economic reality that a relaxation of service standards on two classes of mail is in fact a relaxation of the price cap applicable to those classes. For the price cap to have any meaning, there must also be a stable level of service.

Chapters III and IV examine the two quantitative points of evaluation that the Postal Service, under sound business practice, would balance in evaluating whether to move forward with its proposal. Chapter III discusses the uncertainty surrounding the estimates of lost volume and revenue due to the proposal, and chapter IV examines the cost saving methodology in mail processing and transportation. Together, it is unclear that the Postal Service has adequately reviewed either of these measurable items.

Chapter V discusses the Postal Service's optimization efforts. While such efforts represent an improvement from previous efforts to optimize facets of the Postal Service's business, failure to validate the modeling tools and interjection of manager insight without re-optimizing the result means the results gleaned are of limited utility.

It bears repeating that the Public Representative does not oppose the need for network rationalization as the basis Postal Service's proposal. These are desperate times for the Postal Service, and it should be encouraged to find what relief is within its control to grasp. However, the Postal Service's basis for the proposal, as put forward in this docket, is neither complete nor robust. For those reasons, the Public Representative cannot endorse the proposal. The Public Representative respectfully requests that the Commission advise the Postal Service to carefully consider the questions raised (and shortcomings identified) in each facet of its proposal, and to only proceed if it believes the benefit to the Postal Service will significantly outweigh the harm to postal customers. The Postal Service should also explore creating a quantifiable link between quality of service and the price cap to reflect the economic reality of that relationship. Likewise the Postal Service should continue to refine its optimization efforts and use accepted principles to validate and iterate results so that they are most useful.